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REMARKS

The Office Action dated September 7, 2005 has been received and carefully noted. The above amendments to the claims and the following remarks are submitted as a full and complete response to the Office Action.

Claim 11 is amended to correct informalities. No new matter is added. Applicants are grateful for the indication that claims 8 and 11-14 would be allowable if rewritten in independent form. However, Applicants respectfully submit that these claims are allowable in their present form for the reasons set forth below. Claims 1-16 are respectfully submitted for consideration.

The Office Action objected to the drawings. Specifically, the Office Action asserted that Figures 1 and 2 should be designated as "Prior Art" because only that which is old is illustrated. Applicants respectfully submit that Figures 1 and 2 do not illustrate prior art and therefore should not be labeled as such.

Figures 1 and 2 are not described in the "Background of the Invention" section of the specification. Thus, Applicants have not admitted that the features illustrated in Figures 1 and 2 are in fact prior art. Further, Applicants submit that Figures 1 and 2 illustrate circuits with bi-directional terminals. Thus, the circuitry illustrated in Figures 1 and 2 are not conventional and are therefore not prior art.

Applicants respectfully submit that because Figures 1 and 2 do not illustrate admitted prior art or conventional circuitry, the figures do not illustrate "Prior Art" and

should not be labeled as such. Accordingly, withdrawal of the objection to the drawings is respectfully requested.

The Office Action objected to claim 11 because of informalities. Applicants respectfully submit that claim 11 is amended to correct the informalities of claim 11. Accordingly, withdrawal of the objection to claim 11 is respectfully requested.

The Office Action rejected claims 1-7 and 9-10 under 35 U.S.C. §102(e) as being anticipated by US Patent No. 6,686,767 to Wasson (Wasson). This rejection is respectfully traversed.

Claim 1, from which claims 2-5 depend, recites a circuit element. The circuit element includes two or more logically entangled bi-directional terminals, wherein each bi-directional terminal can assume any one of three logical states, which are (a) a logical true state, (b) a logical false state, and (c) an indefinite state, in which state the bi-directional terminal accepts one of the logical true and logical false states as an external input from an external source. The circuit element further includes an entanglement logic for resolving the logical state of each of the bi-directional terminals according to a predetermined set of logical entanglement rules between the bi-directional terminals.

Claim 6, from which claims 7-14 depend, recites a network for logical deduction. The network includes two or more circuit elements. Each of the circuit elements includes two or more logically entangled bi-directional terminals, wherein each bi-directional terminal can assume any one of three logical states, which are, (a) a logical true state;

(b) a logical false state, and (c) an indefinite state, in which state the bi-directional terminal accepts one of the logical true and logical false states as an external input from an external source, and an entanglement logic for resolving the logical state of each of the bi-directional terminals according to a predetermined set of logical entanglement rules between the bi-directional terminals. The network further includes a set of additional terminals, each additional terminal accepting a logical true state or logical false state as an input, wherein the inputs to the set of additional terminals collectively determine which of several sets of logical entanglement rules are to be used for said resolving.

Applicants respectfully submit that the cited reference fails to disclose or suggest all of the features recited in the pending claims.

Wasson is directed to an apparatus and method for controlling a three-state bus. In Wasson, a set of three-state driver columns is connected to the data bus and each three-state driver column is connected to each signal line of the set of signal lines. A programmable synchronous three-state control circuit responds to a control signal and select signals to produce a three-state output enable signal which is applied to a selected three-state driver column of the set of three-state driver columns so as to control data signals on the data bus.

Applicants respectfully submit that Wasson fails to disclose or suggest at least the feature of a circuit element comprising two or more directional terminals, as recited in claim 1 and similarly recited in claim 6. The Office Action alleges that Wasson discloses this feature as the output terminals of three-state driver 26. However, the output terminals

of Wasson's three-state driver 26 are conventional output terminals. See Wasson at column 2 lines 40-54. Further, Wasson fails to even mention, let alone disclose or suggest that the output terminals of three-state driver 26 are bi-directional.

Applicants respectfully submit that Wasson fails to disclose or suggest at least the feature of in which state the bi-directional terminal accepts one of the logical true and logical false states as an external input from an external source or an indefinite state as recited in claim 1 and similarly recited in claim 6.

The Office Action asserted that a conventional high-impedance state in which the output terminals can be driven by external circuitry is analogous to this feature. However, the present invention clearly claims that the terminal in question is more than a conventional three-state terminal. First, the terminal is bi-directional. Second, it accepts one of the logical true and logical false states as an external input. An output of a conventional three-state driver, such as that described in Wasson, does not accept a 0 or 1 as an external input. Instead, the output of a conventional three-state driver can be driven by external circuitry, but the three-state driver does not accept a 0 or 1 as an external input, nor is the output an input (bi-directional) to the conventional three-state driver.

Applicants further submit that Wasson fails to disclose or suggest at least the feature of an entanglement logic for resolving the logical state of each of the bi-directional terminals according to a predetermined set of logical entanglement rules between the bi-directional terminals, as recited in claim 1 and a circuit element comprising two or more logically entangled bi-directional terminals, as recited in claim 6.

Applicants respectfully submit that “entanglement” is used and defined with lexicographical precision and clarity in the present application at least in paragraphs 0005 through 0009 of the specification of the present invention. For instance, paragraph 0005 states that “the entanglement, as used herein, means that the allowed logical value of a variable in a set of two or more variables depends on the logical values of the other variables in the set.” On the other hand, Wasson is completely silent on any allowed logical value of a variable in a set of two or more variables. The Office Action cites Wasson’s ABCE. But in Figure 5, Wasson provides an entirely conventional truth table for the variables (inputs) ABCD. In the truth table, any variable (input) can take any (either) value 0 or 1, regardless of the other variables (inputs). Hence, in Wasson, the allowed logical value of a variable in a set of two or more variables in no way depends on the logical values of the other variables in the set.

Applicants respectfully submit that because claims 2-6, 9 and 10 depend from claims 1 and 6, these claims are allowable at least for the same reasons as claims 1 and 6. Further, Applicants submit that Wasson fails to disclose or suggest all of the features of these dependent claims.

Based at least on the above, Applicants respectfully submit that the cited reference fails to disclose or suggest all of the features recited in claims 1-7, 9 and 10. Accordingly, withdrawal of the rejection of these claims under 35 U.S.C. 102(e) is respectfully requested.

The Office Action rejected claims 15 and 16 under 35 U.S.C. §103(a) as being obvious over Wasson, in view of US Patent No. 6,922,665 to Guccione et al (Guccione). The Office Action took the position that Wasson disclosed all of the features recited in these claims except for the feature of a computer program product. The Office Action asserted that Guccione disclosed this feature. Applicants respectfully submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features recited in these claims.

Claim 15 recites a computer program product including program instructions, wherein the program instructions cause a computer to simulate the circuit element according to claim 1, when said computer program product is run on said computer.

Claim 16 recites a computer program product including program instructions, wherein the program instructions cause a computer to simulate the network according to claim 6, when said computer program product is run on said computer.

Applicants respectfully submit that the cited references fail to disclose or suggest all of the features recited in the above claims. Specifically, Applicants submit that Wasson is deficient at least for the reasons stated above regarding claims 1 and 6 and Guccione fails to cure these deficiencies.

Guccione is directed to a method and system for simulating a circuit design for a programmable logic device (PLD) at the device level. The same configuration data that is used to configure a PLD is used to generate objects that represent configurable logic elements of the PLD. Events are generated based on changes in output signals states of

the objects. Each event includes an input signal state and identifies an object to which the input signal is to be applied. However, Guccione fails to mention, disclose or suggest the features recited in claims 1 and 6, and therefore fails to cure the deficiencies of Wasson.

Based at least on the above, Applicants respectfully submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features recited in claims 15 and 16. Accordingly, withdrawal of the rejection of these claims under 35 U.S.C. 103(a) is respectfully requested.


The Office Action objected to claims 8 and 11-14 as being dependent from a rejected base claim, and would be allowable if rewritten into independent form. Applicants respectfully submit that because these claims depend from claim 6, these claims are allowable at least for the same reasons as claim 6. Accordingly, withdrawal of the objection to claims 8 and 11-14 is respectfully requested.

Applicants respectfully submit that each of claims 1-16 recite features that are neither disclosed nor suggested in the cited references. Accordingly, Applicants respectfully request that each of claims 1-16 be allowed and this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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